

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 8 and 9 are currently being amended.

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-9 are now pending in this application.

Examiner Interview

Applicants appreciate the courtesies of Examiner Tran during the personal interview of August 9, 2005, the Interview Summary of which is of record in the application. Examiner Tran suggested amending claim 1 (with corresponding amendments to claims 8 and 9) to change the phrase “detecting an activity transition time at which the exhaust gas purifying catalyst changes from an inactive state to an active state, in accordance with the concentration of the exhaust gas component” to “detecting an activity transition time at which the exhaust gas purifying catalyst changes from an inactive state to an active state, based on the concentration of the exhaust gas component.” (emphasis added).

Applicants have amended claims 1, 8 and 9 as suggested by Examiner Tran.

Rejection under 35 U.S.C. § 102

Claims 1-6 and 8-9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,713,197 to Ogawa et al. (“Ogawa”). Applicants respectfully traverse this rejection for at least the following reasons.

As mentioned above, independent claims 1, 8 and 9 have been amended to change the phrase “detecting an activity transition time at which the exhaust gas purifying catalyst changes from an inactive state to an active state, in accordance with the concentration of the exhaust gas component” to “detecting an activity transition time at which the exhaust gas

purifying catalyst changes from an inactive state to an active state, based on the concentration of the exhaust gas component.” Nevertheless, Applicants’ arguments in the Reply filed on August 4, 2005 are essentially maintained as follows.

The control unit in the exhaust gas purifying system of claim 1 is programmed to perform the following steps: (1) “detecting an activity transition time at which the exhaust gas purifying catalyst changes from an inactive state to an active state, based on the concentration of the exhaust gas component detected by the concentration sensor,” and (2) “judging a deterioration of the exhaust gas purifying catalyst at the activity transition time.” Thus in claim 1, the control unit first (1) detects an activity transition time based on a detected concentration of exhaust gas component, and then (2) judges a deterioration of the exhaust gas purifying catalyst at the activity transition time. Ogawa fails to disclose the control unit programmed as recited in claim 1, or the advantages attendant thereto.

The Office Action on page 5 cites to Ogawa in column 12, lines 9-67 and column 13, lines 1-20 as disclosing the steps of detecting an activity transition time in accordance with a detected concentration of exhaust gas component, and judging a deterioration of the exhaust gas purifying catalyst at the activity transition time. Applicants respectfully disagree. Ogawa discloses that the catalyst is active when it is judged that the engine is warmed up, and the catalyst bed temperature TC is higher than a lower limit (See col. 12, lines 36-43). Thus, Ogawa discloses that the catalyst is activated based on the catalyst bed temperature. The Ogawa method of determining the activation of the catalyst based on the catalyst bed temperature is quite different from the method performed by the control unit in claim 1, where the detection of the activity transition time is based on a detected concentration of an exhaust gas component. Thus, Ogawa fails to disclose features of claim 1.

The system of claim 1 is an improvement over prior systems which determine that a catalyst is deteriorated based on the concentration of an exhaust gas component from the catalyst (See instant specification, page 3, lines 16-29). Ogawa, in a similar fashion to these prior systems, discloses judging the deterioration of a catalyst based on a signal from an O₂ sensor. The system as recited in claim 1, by contrast, judges the deterioration of the exhaust gas purifying catalyst at the activity transition time, where the activity transition time is

detected based on a detected concentration of exhaust gas component. Because the exhaust gas component, such as NO_x for example, concentration detected will be significantly different when the catalyst is active as compared to when it is inactive, the activity transition time can be accurately detected even when using a concentration sensor which is relatively inexpensive and has a relatively low detection accuracy (See instant specification, page 24, lines 26-31). The system of Ogawa, failing to disclose determining the activity transition based on a detected concentration of an exhaust component, and then judging the deterioration of the catalyst at the determined activity transition time, fails to realize these advantages, (i.e., more accurate detection even with relatively inexpensive sensors).

A system such as that of Ogawa, which is based on judging that the catalyst is activated based on the temperature of the catalyst, does not judge the activation as accurately as is done in the system of claim 1. When a catalyst deteriorates, the temperature at which the catalyst is activated unavoidably rises. This rise in catalyst activation temperature may occur both in a NO_x catalyst (for removing NO_x), as well as in a three-way catalyst (for removing HC, CO and NO_x). This rising catalyst activation temperature makes it difficult to accurately judge the activation of the catalyst. For example, in case that a temperature value for judging that the catalyst has been activated is set at 250°C, when the catalyst is deteriorated and brought into a state where it would be activated at 300°C, the catalyst is judged to have been activated (i.e., at 250°C) even though the catalyst has actually not yet been activated.

In contrast, according to the system of claim 1, the catalyst is judged to have changed from its inactive state to its active state based on the exhaust gas component detected by the concentration sensor (for detecting the concentration of the exhaust gas component), which is less easily deteriorated as compared with a catalyst. As a result, according to the present invention, the deterioration of the catalyst can be accurately judged regardless of deterioration of the catalyst.

Independent claims 8 and 9 are also believed to be allowable for at least the same reasons discussed about with respect to claim 1. The dependent claims are allowable for at least the same reasons as their respective independent claims, as well as for further patentable features recited therein.

Applicants believe that the present application is now in condition for allowance.
Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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